# Open Plan – What is it?

• **Scheduling program being used for BTeV project management**

• **Similar to MS Project does appears to be much more complex**

• **Has direct connection to Lab Oracle database**

• **Level 2 managers are expected to become proficient with it**

• **Scheduling and costing methodologies are tightly regulated by BTeV management**

• <u>**For an example of scale:**</u> **WBS 1.8 (BTeV trigger and software) is 21M$, has 4600 "lines" and ~3500 "tasks"**

Example Open Plan "View"
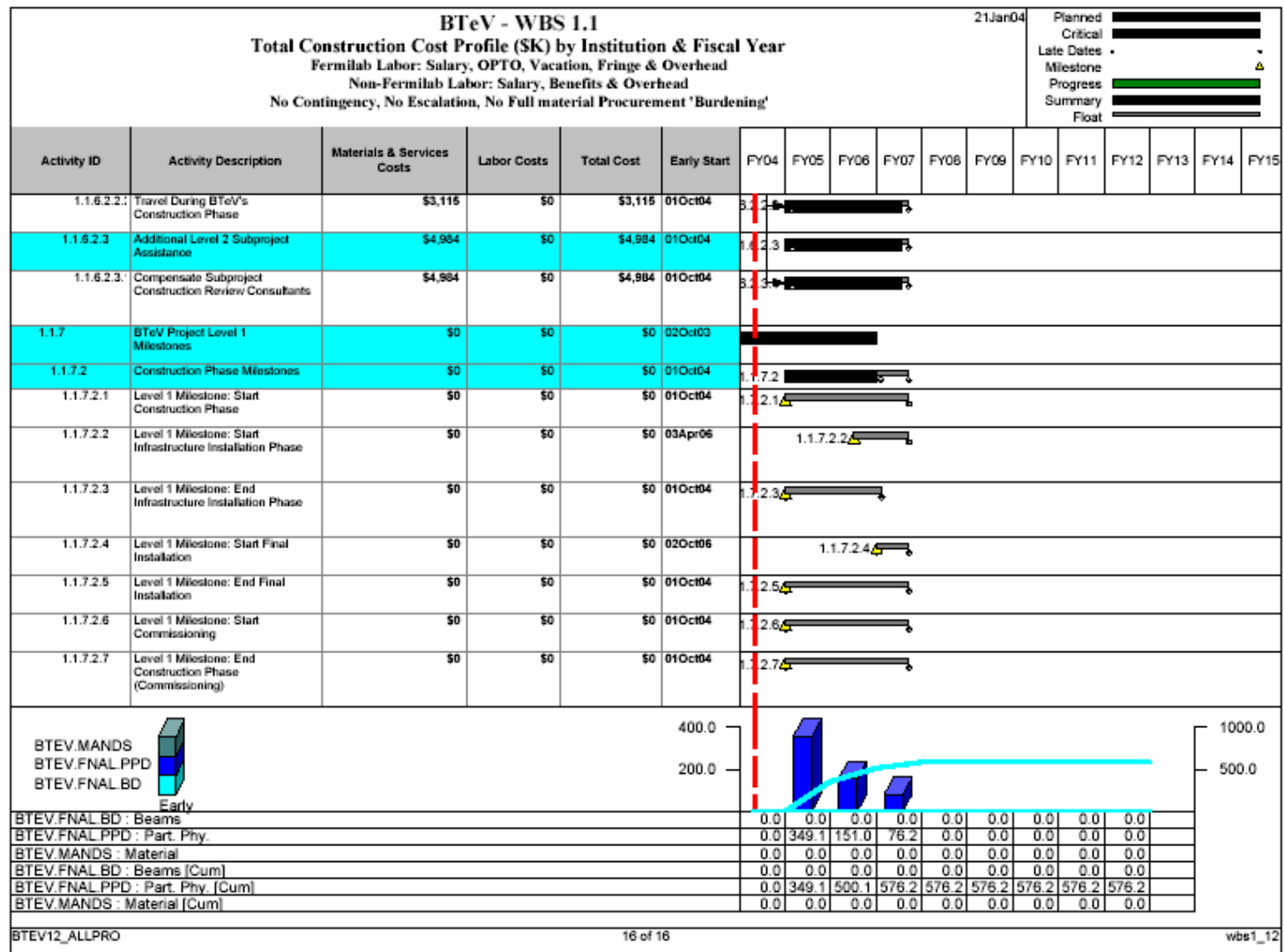
WBS outline (1)

	Level 2 Project		Level 3 Project		Level 4 Project			Project manager	Comments
1.12	C0 IR							M Church	
		1.12.1	new magnet fabrication and test					J Kerby	
				1.12.1.1	LHC quads			tbd	
				1.12.1.2	new spools			tbd	
				1.12.1.3	new separators			tbd	PS's under 1.12.3.3
		1.12.2	convert C0 to normal straight					P Garbincius	
				1.12.2.1	magnet removal and installation			R Reilly	includes all tunnel mods not specifically mentioned below; this project could be naturally divided into 3 -- B4, C0, C1
				1.12.2.2	LCW modifications			J Riordan	bring LCW to headers in Collision Hall and Assembly Hall
				1.12.2.3	synch light monitor			S Pordes	move and rebuild
				1.12.2.4	controls modifications			S Lackey	includes modification of operational software
				1.12.2.5	cryo mods			J Theilacker	
				1.12.2.6	magnet purchase			P Garbincius	buy 2 Tev dipoles; sell 4 MI dipoles
				1.12.2.7	vacuum mods			R Reilly	
				1.12.2.8	alignment			tbd	
				1.12.2.9	wire target			S Pordes	ignore for now
				1.12.2.10	commissioning			tbd	

WBS outline (2)

		1.12.3	**main power supplies**				**G Krafczyk**	
				1.12.3.1	**10KA supplies @ C0**		**G Krafczyk**	**includes 200A trims for Q2's**
				1.12.3.2	**5KA supplies @ B4, C1**		**G Krafczyk**	**includes fabrication of new ones and moving old-Q1 supplies**
				1.12.3.3	**separator PS's**		**tbd**	
				1.12.3.4	**corrector PS's**		**G Krafczyk**	
		1.12.4	**cryogenic systems**				**J Theilacker**	
				1.12.4.1	**cryogenic elements**		**tbd**	**includes fabrication of feedcans, bypasses, etc**
				1.12.4.2	**controls modifications**		**tbd**	
		1.12.5	**controls**				**S. Lackey**	**does not include cryo controls, which has traditionally been handled by cryo group**
				1.12.5.1	**new LB QPM system**		**S Lackey**	
				1.12.5.2	**Tevatron QPM modification**		**K Martin**	
				1.12.5.3	**new collimators**		**D Still**	**involves both controls and tunnel hardware; assume old collimators can be used and 2 new ones installed at B48**
				1.12.5.4	**other …**		**S Lackey**	**could be several projects here; includes software but not software specifically mentioned in 1.12.6.2 and 1.12.8.2**

WBS outline (3)

		1.12.6	instrumentation				S Pordes	
				1.12.6.1	tunnel modifications		S Pordes	minimal; moving LM's and BPM's; assuming synch light is complete in 1.12.2.3; include tiltmeters and position monitoring on LB quads
				1.12.6.2	software modifications		S Pordes	modifications to instrumentation application programs and front-end code to accommodate new operational modes
		1.12.7	tunnel installation				R Reilly	
				1.12.7.1	cryogenic elements		J Theilacker	
				1.12.7.2	magnetic elements		tbd	
				1.12.7.3	LCW modifications		J Riordan	
				1.12.7.4	vacuum mods		R Reilly	
				1.12.7.5	collimators		D Still	
				1.12.7.6	separators		tbd	
		1.12.8	beam commissioning				J Annala	requires Tevatron operational expert
				1.12.8.1	develop commissioning plan		J Annala	
				1.12.8.2	operational software mods		J Annala	sequencer, ramp program, offline tools, …
				1.12.8.3	beam studies		J Annala	

WBS outline - BTeV milestones

		1.12.9	**BTeV standard milestones**		**Level 1**				
				1.12.9.1	**Pre-conceptual R&D**				<u>**Date**</u>
						1.12.9.1.1	**start**		**4/1/04**
						1.12.9.1.2	**end**		**12/31/04**
				1.12.9.2	**Construction**				
						1.12.9.2.1	**start**		**1/1/05**
						1.12.9.2.2	**start FY05 shutdown**		8/1/05
						1.12.9.2.3	**end FY05 shutdown**		**9/25/05**
						1.12.9.2.4	**start FY06 shutdown**		8/1/06
						1.12.9.2.5	**end FY06 shutdown**		9/30/06
						1.12.9.2.6	**start FY07 shutdown**		8/1/07
						1.12.9.2.7	**end FY07 shutdown**		9/12/07
						1.12.9.2.8	**start FY08 shutdown**		8/1/08
						1.12.9.2.9	**end FY08 shutdown**		9/12/08
						1.12.9.2.10	**start FY09 shutdown**		**8/1/09**
						1.12.9.2.11	**end FY09 shutdown**		**10/22/09**
						1.12.9.2.12	**end**		

Data Entry Spreadsheet

1. **Activity or subproject number** **(for example: 1.12.3.4; may get reassigned by Open Plan)**
2. **Whether it is a subproject or activity** **(subprojects do not have resources assigned to them)**
3. **Description of activity or subproject (<50 characters)** **(for example "install synchrotron light monitor", "procure magnet steel", ...)**
4. **Subproject manager** **(a person's name)**
5. **Labor resources required** **(taken from allowed resource category; units can be hours, days, weeks, months)**
6. **Labor contingency** **(in %)**
7. **M&S required** **(# of units and unit cost in FY05 $; keep spares separate if possible)**
8. **M&S contingency** **(in %)**
9. **Duration** **(hours, days, weeks, months; may be overriden by scheduling)**
10. **Predecessor activity and lag** **(the WBS # of the activity which must preceed this activity; lag is delay in days; there may be more than one predecessor)**
11. **WBS dictionary entry**
12. **Basis of Estimate**

"WBS Dictionary" and "Basis of Estimate" (BOE)

Design & prepare fabrication drawings for the Aluminum support plate. The existing aluminum support plates hold the magnet coils in place. They will be modified to provide mounting features for the tracking system.

Sample WBS Dictionary entry for the Activity "Design and Prepare Drawings for Aluminum Support Plate Modfications" from BTeV Vertex Magnet Project.

Labor BOE Time estimate based on engineering judgment for determining attachment requirements, generating a layout drawing & 1 detail drawing. [JH]

Initials required

Sample BOE entry for the Activity "Design and Prepare Drawings for Aluminum Support Plate Modfications" from BTeV Vertex Magnet Project. BOE required for both labor and M&S.

● **See BTeV documents #1964 and #1956 for further guidance**
http://www-btev.fnal.gov/cgi-bin/DocDB/DocumentDatabase
(username password = btev 1armbandit)

Resources - BD

Name	Description	Unit Cost	Unit
BTEV.FNAL.BD.COOP	co-op student	33.13	hours
BTEV.FNAL.BD.DSGRDR	designer/drafter	69.21	hours
BTEV.FNAL.BD.EA	engineering associate	64.88	hours
BTEV.FNAL.BD.EE	electrical engineer	82.18	hours
BTEV.FNAL.BD.ENGPHY	engineering physicist	?	hours
BTEV.FNAL.BD.GRADS	grad student	0.00	hours
BTEV.FNAL.BD.MACH	machinist	?	hours
BTEV.FNAL.BD.ME	mechanical engineer	80.02	hours
BTEV.FNAL.BD.OPSPEC	operations specialist	?	hours
BTEV.FNAL.BD.PDOC	research associate	0.00	hours
BTEV.FNAL.BD.PHY	scientist, assoc. scientist, appl. physicist	0.00	hours
BTEV.FNAL.BD.SE	computer professional	80.02	hours
BTEV.FNAL.BD.SRTECH	senior technician	70.68	hours
BTEV.FNAL.BD.SSTUDENT	summer student	30.92	hours
BTEV.FNAL.BD.TECH	technician	50.80	hours
BTEV.FNAL.BD.VTECH	vacuum technician	?	hours
BTEV.FNAL.BD.VTECHLD	vacum technician crew leader	?	hours
BTEV.FNAL.BD.WELD	welder	?	hours

(Blue font signifies new request to BTeV management)

Resources – TD, M&S

Name	Description	Unit Cost	Unit
BTEV.FNAL.TS.AA	administrative assistant, clerk, secretary	?	hours
BTEV.FNAL.TS.DSGRDR	designer/drafter	?	hours
BTEV.FNAL.TS.EE	electrical engineer	82.18	hours
BTEV.FNAL.TS.ENGPHY	engineering physicist	?	hours
BTEV.FNAL.TS.MACH	machinist	?	hours
BTEV.FNAL.TS.ME	mechanical engineer	80.02	hours
BTEV.FNAL.TS.PDOC	research associate	?	hours
BTEV.FNAL.TS.PHY	scientist, assoc. scientist, appl. physicist	?	hours
BTEV.FNAL.TS.PROCE	process engineer	?	hours
BTEV.FNAL.TS.SE	computer professional	?	hours
BTEV.FNAL.TS.SRTECH	senior technician	70.68	hours
BTEV.FNAL.TS.TECH	technician	50.80	hours
BTEV.FNAL.TS.WELD	welder	?	hours
BTEV.MANDS.ADDITIONAL	additional materials (spares?)	1.16	$$
BTEV.MANDS.BASE	base materials	1.16	$$
BTEV.MANDSEXEMPT	exempt (large contracts partially exempt from G&A?)	1.00	$$
BTEV.MANDSL	MANDS labor	1.00	hours
BTEV.MANDSPASS	pass through (eg. contracts let to univ, exempt from G&A)	1.01	$$

(Blue font signifies new request to BTeV management)

(Only 1 MANDS category allowed per activity !)

Contingency

● List separate contingency for labor and materials

Activity	Contingency
Labor	
software development	**20% - 30%**
project has been done before and has a reasonably good estimate based on actual time paid	**15% - 25%**
project is well-defined and effort has been quantified - no idle time paid	**20% - 30%**
project is well-defined and effort has been quantified - idle time paid	**40% - 60%**
project has a time and motion type study	**30% - 40%**
complex project with a long learning curve or uncertain labor requirements	**50% - 100%**
M&S	
items have already been purchased at least once or items have a very firm quote and there is more than one potential vendor	**10% - 15%**
items have already been purchased at least once or items have a very firm quote but there is likely to be only one vendor	**25% - 50%**
items that can be readily estimated from a reasonably detailed design or for which there exists a close "analogous" system with well-understood costs	**25% - 50%**
items for which only a conceptual design exists	**50% - 70%**
items which have unproven yields or for which there are "unique" issues	**50% - 70%**
items for which there does not yet exist a detailed conceptual design	**70% - 100%**
items whose scope could change due to unforeseen conditions	**30% - 70%**
items with uncertainties due to technology projections	**variable %**

For more guidance see
http://www-btev.fnal.gov/atwork/documents/wbs/schedule/ContingencyMethodology.shtml
(username password = btev 1armbandit)

FY05 $$

- **Estimates must be in FY05 $$**

I am not yet ready to provide intelligent guidance on this

Calender

2004

8 hrs/day

40 hrs/week

160 hrs/month

Calendar: BTEV - < Default >

Working Day: [ ]   Non-Working Day: [red]   Extra Day: [yellow]   Holiday: [green]

Etc.

- **If something doesn't make sense, please ask**

- **Don't worry about C0 IR internal milestones yet**

- **Input from MS Project may be an option in the future**

- **How to include project management ?**

- **Instructions will change from time to time because**

    - **BTeV management changes its mind**

    - **I change my mind (got something wrong, discover something new, learn from experience, get a better idea, ...)**